

Introduction The role of fusion in lumbar degenerative spondylolisthesis (LDS) is controversial. The Clinical and Radiographic Degenerative Spondylolisthesis (CARDS) and Degenerative Spondylolisthesis Instability Classification (DSIC) systems were developed to assist surgeons in surgical technique selection. This study evaluated whether outcomes varied with different surgical techniques across the CARDS and DSIC categories. **Methods** LDS patients undergoing surgery were enrolled at 2 institutions in Switzerland and the United States and classified according to the CARDS and DSIC systems. The Core Outcomes Measure Index (COMI) was completed preop and at 3 and 12 mo post-operatively. Patients treated with decompression (D) alone or D with uninstrumented fusion (D&UF) were combined for analysis ("uninstrumented" group) as were patients treated with D and posterolateral instrumented fusion or with D and posterolateral and interbody instrumented fusion ("instrumented" group). Unadjusted analyses and mixed effect models compared COMI scores between the two surgery technique groups (uninstrumented vs. instrumented), stratified by CARDS and DSIC category over time. **Results** 508 patients were enrolled; 460 had sufficient data to be classified according to CARDS and 459, according to DSIC. 7% were classified as CARDS A (most "stable"), 28% as CARDS B, 48% as CARDS C, and 17% as CARDS D (least "stable"). 2% were classified as DSIC 1 (most "stable"), 80% as DSIC 2, and 17% as DSIC 3 (least "stable"). 133 patients (26%) underwent D alone, 30 (6%) D&UF, 42 (8%) D and posterolateral instrumented fusion, and 303 (60%) D with posterolateral and interbody instrumented fusion. Patients in the least "stable" categories tended to be less likely to be treated with an uninstrumented technique (CARDS D, 19% and DSIC 3, 21% vs. in each case 32% for the other categories; $p=0.10$ for CARDS, $p=0.02$ for DSIC). There were no significant differences in 3 or 12 mo COMI scores between surgical technique groups stratified by CARDS or DSIC category. In unadjusted analyses, there was a trend towards less improvement in 12 mo COMI change score in the CARDS D patients in the uninstrumented group compared to the instrumented group (-3.01 vs. -3.88, $p=0.10$). Reoperation rates were not significantly different between the surgical technique groups stratified by CARDS and DSIC category. **Discussion** In general, outcomes for uninstrumented and instrumented surgical techniques were similar across the DSIC and CARDS categories. There was a trend towards less improvement in the CARDS D patients treated with uninstrumented techniques, suggesting that in patients with kyphosis (the defining feature of the CARDS D category) better outcomes may be associated with instrumentation. The major limitation of this study were the low numbers ($n=15-17$) in the least "stable" uninstrumented groups, likely due to surgeons choosing to avoid uninstrumented techniques in these patients.